

Sequence Listing

Sequence Listing

5 <110> Chen, Jian
 Filvaroff, Ellen
 Goddard, Audrey
 Gurney, Austin
 Li, Hanzhong
 Wood, William I.

10 <120> IL-17 HOMOLOGOUS POLYPEPTIDES AND THERAPEUTIC USES
 THEREOF

15 <130> P1381-R1

15 <141> 1999-05-14

20 <150> US 60/085,579
 <151> 1998-05-15

20 <150> US 60/113,621
 <151> 1998-12-23

25 <160> 26

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 <213> Homo sapiens

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35 Phe Leu Gly Leu Gly Gln Pro Arg Ser Pro Lys Ser Lys Arg Lys
 20 25 30

40 Gly Gln Gly Arg Pro Gly Pro Leu Ala Pro Gly Pro His Gln Val
 35 40 45

40 Pro Leu Asp Leu Val Ser Arg Met Lys Pro Tyr Ala Arg Met Glu
 50 55 60

45 Glu Tyr Glu Arg Asn Ile Glu Glu Met Val Ala Gln Leu Arg Asn
 65 70 75

45 Ser Ser Glu Leu Ala Gln Arg Lys Cys Glu Val Asn Leu Gln Leu
 80 85 90

Trp Met Ser Asn Lys Arg Ser Leu Ser Pro Trp Gly Tyr Ser Ile
 95 100 105
 5 Asn His Asp Pro Ser Arg Ile Pro Val Asp Leu Pro Glu Ala Arg
 110 115 120
 Cys Leu Cys Leu Gly Cys Val Asn Pro Phe Thr Met Gln Glu Asp
 125 130 135
 10 Arg Ser Met Val Ser Val Pro Val Phe Ser Gln Val Pro Val Arg
 140 145 150
 Arg Arg Leu Cys Pro Pro Pro Arg Thr Gly Pro Cys Arg Gln
 15 155 160 165
 Arg Ala Val Met Glu Thr Ile Ala Val Gly Cys Thr Cys Ile Phe
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 30 ccagcccagg agccccaaaa gcaagaggaa ggggcaaggg cggcctggc 150
 ccctggcccc tggccctcac caggtgccac tggacctggt gtcacggatg 200
 aaaccgtatg cccgcatgga ggagtatgag aggaacatcg aggagatggt 250
 35 ggcccagctg aggaacagct cagagctggc ccagagaaag tgtgaggtca 300
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 40 agcatcaacc acgacccccag ccgtatcccc gtggacctgc cggaggcacg 400
 gtgcctgtgt ctgggctgtg tgaaccctt caccatgcag gaggaccgca 450
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 45 tgcccgccac cgccccgcac agggccttgc cgccagcgcg cagtcatgga 550
 gaccatcgct gtgggctgca cctgcacatt ctgaatcacc tggcccagaa 600

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Cys Leu Ala His His Asp Pro Ser Leu Arg Gly His Pro His Ser
 20 25 30

His Gly Thr Pro His Cys Tyr Ser Ala Glu Glu Leu Pro Leu Gly
 35 40 45

20

Gln Ala Pro Pro His Leu Leu Ala Arg Gly Ala Lys Trp Gly Gln
 50 55 60

25

Ala Leu Pro Val Ala Leu Val Ser Ser Leu Glu Ala Ala Ser His
 65 70 75

Arg Gly Arg His Glu Arg Pro Ser Ala Thr Thr Gln Cys Pro Val
 80 85 90

30

Leu Arg Pro Glu Glu Val Leu Glu Ala Asp Thr His Gln Arg Ser
 95 100 105

Ile Ser Pro Trp Arg Tyr Arg Val Asp Thr Asp Glu Asp Arg Tyr
 110 115 120

35

Pro Gln Lys Leu Ala Phe Ala Glu Cys Leu Cys Arg Gly Cys Ile
 125 130 135

40

Asp Ala Arg Thr Gly Arg Glu Thr Ala Ala Leu Asn Ser Val Arg
 140 145 150

Leu Leu Gln Ser Leu Leu Val Leu Arg Arg Arg Pro Cys Ser Arg
 155 160 165

45

Asp Gly Ser Gly Leu Pro Thr Pro Gly Ala Phe Ala Phe His Thr
 170 175 180

Glu Phe Ile His Val Pro Val Gly Cys Thr Cys Val Leu Pro Arg
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Ser Val

5 197

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gcccaccatg acccctccct cagggggcac ccccacagtc acggtacccc 150

20 acactgctac tcggctgagg aactgcccct cggccaggcc ccccccacacc 200

tgctggctcg aggtgccaag tgggggcagg ctggccctgt agccctggtg 250

tccagcctgg aggcagcaag ccacaggggg aggcacgaga ggcctcagc 300

25 tacgacccag tgcccggtgc tgcggccggaa ggaggtgttg gaggcagaca 350

cccacccagcg ctccatctca ccctggagat accgtgtgga cacggatgag 400

gaccgctatc cacagaagct ggccttcgccc gagtgccctgt gcagaggctg 450

30 tatcgatgca cggacgggccc gcgagacagc tgcgctcaac tccgtgcggc 500

tgctccagag cctgctggtg ctgcggccgccc ggccctgctc cgcgcacggc 550

35 tcggggctcc ccacacctgg ggcctttgcc ttccacacccg agttcatcca 600

cgtccccgtc ggctgcacct gcgtgctgcc ccgttcagtg tgaccgcccga 650

ggccgtgggg cccctagact ggacacgtgt gctccccaga gggcaccccc 700

40 tatttatgtg tatttattgt tatttatatg cctcccccaa cactaccctt 750

ggggtctggg cattccccgt gtctggagga cagccccca ctgttctcct 800

45 catctccagc ctcagtagtt ggggttagaa ggagctcagc accttccca 850

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cctgtcctgc tcccggttc ccttacccta tcactggcct caggccccgc 950
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<222> 105-115
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gctcnnnnnn nnnnnaattc ggtacgaggg tggggttcag gccccccagca 150
gctgcaggct gacccatgcag cttggcgaa tggactggcc tcacaacctg 200
25 ctgtttcttc ttaccatttc catcttcctg gggctggcc agcccaaggag 250
ccccaaaaagc aagaggaagg ggcaagggcg gcctgggccc ctggtcctg 300
30 gcccacca ggtgccactg gacctgggtcacggatgaa accgtatgcc 350
cgcatggagg agtatgagag gaacatcgag gagatgttgg cccagctgag 400
gaacagttca gagctggccc agagaaaatg tgaggtaac ttgcagctgt 450
35 ggatgtccaa caagaggagc ctgtctccct ggggtacag catcaaccac 500
gaccggcc gttatccccgt ggacccctgg aggcacggc cctgtgtctg 550
40 ggcttgggtg aacccttca ccatgcagga ggaccgcagc atggtgagcg 600
tgccgggttt cagccaggtt cctgtgcgcc gccgcctctg cccggccaccg 650
ccccggcacag ggccttgcgg ccagcgcgca gtcatggaga ccatcgctgt 700
45 gggctgcacc tgcattttctt gaatcgaccc ggcccagaag ccaggccagc 750
agcccgagac catcctcctt gcaccccttgc gccaagaaag gcctatgaaa 800

agtaaacact gactttgaa agcaaaaaaa 830

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20 agccaggagc cccaaaagca agaggaaggg gcaagggcgg cctgggccc 150
tggcctggcc tcaccaggtg ccactggacc tggtgtcacg gatgaaaccg 200
tatgcccgc 250 tggaggagta tgagaggaac atcgaggaga tggtgccca
gctgaggaac agctcanaag ctggcccaga gaaagtgtga ggtcaacttg 300
cagctgtgga tgtccaacaa gaaggagcct gtctcccttg gggctacaag 350
30 catcaaccac cgaccccagc cgtatccccg tgggaccttg ccgggac 397
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gcagaggctg tatcgatgca cggacgggcc gcgagacagc tgcgctcaac 100
40 tccgtgcggc tgctccagag cctgctggtg ctgcggccgccc ggccctgctc 150
ccgcgacggc tcggggctcc ccacacctgg ggcttgc 200
45 agttcatcca cgtccccgtc ggctgcaccc 230
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5 atccacagaa gctggccttc gccg 24

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<212> DNA

10 <213> Artificial sequence

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15 <210> 10

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20 <400> 10

tatccacaga agctggcctt cgccgagtgc ctgtgcagag 40

<210> 11

<211> 155

25 <212> PRT

<213> Human

<400> 11

Met Thr Pro Gly Lys Thr Ser Leu Val Ser Leu Leu Leu Leu
30 1 5 10 15

Ser Leu Glu Ala Ile Val Lys Ala Gly Ile Thr Ile Pro Arg Asn
20 25 30

35 Pro Gly Cys Pro Asn Ser Glu Asp Lys Asn Phe Pro Arg Thr Val
35 40 45

Met Val Asn Leu Asn Ile His Asn Arg Asn Thr Asn Thr Asn Pro
50 55 60

40 Lys Arg Ser Ser Asp Tyr Tyr Asn Arg Ser Thr Ser Pro Trp Asn
65 70 75

45 Leu His Arg Asn Glu Asp Pro Glu Arg Tyr Pro Ser Val Ile Trp
80 85 90

Glu Ala Lys Cys Arg His Leu Gly Cys Ile Asn Ala Asp Gly Asn
95 100 105

Val Asp Tyr His Met Asn Ser Val Pro Ile Gln Gln Glu Ile Leu
 110 115 120

5 Val Leu Arg Arg Glu Pro Pro His Cys Pro Asn Ser Phe Arg Leu
 125 130 135

Glu Lys Ile Leu Val Ser Val Gly Cys Thr Cys Val Thr Pro Ile
 140 145 150

10 Val His His Val Ala
 155

<210> 12

15 <211> 408

<212> PRT

<213> Artificial

<220>

20 <223> Artificial Sequence 1-408

<400> 12

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25 Phe Leu Gly Leu Gly Gln Pro Arg Ser Pro Lys Ser Lys Arg Lys
 20 25 30

Gly Gln Gly Arg Pro Gly Pro Leu Ala Pro Gly Pro His Gln Val
 30 35 40 45

Pro Leu Asp Leu Val Ser Arg Met Lys Pro Tyr Ala Arg Met Glu
 50 55 60

35 Glu Tyr Glu Arg Asn Ile Glu Glu Met Val Ala Gln Leu Arg Asn
 65 70 75

Ser Ser Glu Leu Ala Gln Arg Lys Cys Glu Val Asn Leu Gln Leu
 80 85 90

40 Trp Met Ser Asn Lys Arg Ser Leu Ser Pro Trp Gly Tyr Ser Ile
 95 100 105

45 Asn His Asp Pro Ser Arg Ile Pro Val Asp Leu Pro Glu Ala Arg
 110 115 120

Cys Leu Cys Leu Gly Cys Val Asn Pro Phe Thr Met Gln Glu Asp
 125 130 135

Arg Ser Met Val Ser Val Pro Val Phe Ser Gln Val Pro Val Arg
 140 145 150
 5 Arg Arg Leu Cys Pro Pro Pro Arg Thr Gly Pro Cys Arg Gln
 155 160 165
 Arg Ala Val Met Glu Thr Ile Ala Val Gly Cys Thr Cys Ile Phe
 170 175 180
 10 Pro Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu
 185 190 195
 15 Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp
 200 205 210
 Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val
 215 220 225
 20 Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val
 230 235 240
 Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu
 245 250 255
 25 Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu
 260 265 270
 His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser
 30 275 280 285
 Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala
 290 295 300
 35 Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser
 305 310 315
 Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val
 320 325 330
 40 Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn
 335 340 345
 Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
 45 350 355 360
 Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
 365 370 375

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His
 380 385 390
 5 Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser
 395 400 405
 10 Pro Gly Lys
 408
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 <212> PRT
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 15 <220>
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 Cys Leu Ala His His Asp Pro Ser Leu Arg Gly His Pro His Ser
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 25 His Gly Thr Pro His Cys Tyr Ser Ala Glu Glu Leu Pro Leu Gly
 35 40 45
 30 Gln Ala Pro Pro His Leu Leu Ala Arg Gly Ala Lys Trp Gly Gln
 50 55 60
 Ala Leu Pro Val Ala Leu Val Ser Ser Leu Glu Ala Ala Ser His
 65 70 75
 35 Arg Gly Arg His Glu Arg Pro Ser Ala Thr Thr Gln Cys Pro Val
 80 85 90
 40 Leu Arg Pro Glu Glu Val Leu Glu Ala Asp Thr His Gln Arg Ser
 95 100 105
 Ile Ser Pro Trp Arg Tyr Arg Val Asp Thr Asp Glu Asp Arg Tyr
 110 115 120
 45 Pro Gln Lys Leu Ala Phe Ala Glu Cys Leu Cys Arg Gly Cys Ile
 125 130 135
 Asp Ala Arg Thr Gly Arg Glu Thr Ala Ala Leu Asn Ser Val Arg
 140 145 150

Leu Leu Gln Ser Leu Leu Val Leu Arg Arg Arg Pro Cys Ser Arg
 155 160 165
 5 Asp Gly Ser Gly Leu Pro Thr Pro Gly Ala Phe Ala Phe His Thr
 170 175 180
 Glu Phe Ile His Val Pro Val Gly Cys Thr Cys Val Leu Pro Arg
 185 190 195
 10 Ser Val Pro Asp Lys Thr His Thr Cys Pro Pro Cys Pro Ala Pro
 200 205 210
 Glu Leu Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro
 15 215 220 225
 Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val
 230 235 240
 20 Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp
 245 250 255
 Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg
 260 265 270
 25 Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr
 275 280 285
 Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys
 30 290 295 300
 Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser
 305 310 315
 35 Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro
 320 325 330
 Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val Ser Leu Thr Cys
 335 340 345
 40 Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
 350 355 360
 Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val
 45 365 370 375
 Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val
 380 385 390

Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val			
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5 Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser			
410	415	420	
Leu Ser Pro Gly Lys			
425			
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Pro Pro Gly Glu Asp Ser Lys Asp Val Ala Ala Pro His Arg Gln			
35 40 45			
25 Pro Leu Thr Ser Ser Glu Arg Ile Asp Lys Gln Ile Arg Tyr Ile			
50 55 60			
30 Leu Asp Gly Ile Ser Ala Leu Arg Lys Glu Thr Cys Asn Lys Ser			
65 70 75			
Asn Met Cys Glu Ser Ser Lys Glu Ala Leu Ala Glu Asn Asn Leu			
80 85 90			
35 Asn Leu Pro Lys Met Ala Glu Lys Asp Gly Cys Phe Gln Ser Gly			
95 100 105			
40 Phe Asn Glu Glu Thr Cys Leu Val Lys Ile Ile Thr Gly Leu Leu			
110 115 120			
Glu Phe Glu Val Tyr Leu Glu Tyr Leu Gln Asn Arg Phe Glu Ser			
125 130 135			
45 Ser Glu Glu Gln Ala Arg Ala Val Gln Met Ser Thr Lys Val Leu			
140 145 150			
Ile Gln Phe Leu Gln Lys Lys Ala Lys Asn Leu Asp Ala Ile Thr			
155 160 165			

Thr Pro Asp Pro Thr Thr Asn Ala Ser Leu Leu Thr Lys Leu Gln
 170 175 180
 5 Ala Gln Asn Gln Trp Leu Gln Asp Met Thr Thr His Leu Ile Leu
 185 190 195
 Arg Ser Phe Lys Glu Phe Leu Gln Ser Ser Leu Arg Ala Leu Arg
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 10 Gln Met
 212
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 15 <211> 320
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 35 40 45
 Pro Gly Leu Asn Cys Thr Val Lys Asn Ser Thr Cys Leu Asp Asp
 30 50 55 60
 Ser Trp Ile His Pro Arg Asn Leu Thr Pro Ser Ser Pro Lys Asp
 65 70 75
 35 Leu Gln Ile Gln Leu His Phe Ala His Thr Gln Gln Gly Asp Leu
 80 85 90
 Phe Pro Val Ala His Ile Glu Trp Thr Leu Gln Thr Asp Ala Ser
 95 100 105
 40 Ile Leu Tyr Leu Glu Gly Ala Glu Leu Ser Val Leu Gln Leu Asn
 110 115 120
 Thr Asn Glu Arg Leu Cys Val Arg Phe Glu Phe Leu Ser Lys Leu
 45 125 130 135
 Arg His His His Arg Arg Trp Arg Phe Thr Phe Ser His Phe Val
 140 145 150

Val	Asp	Pro	Asp	Gln	Glu	Tyr	Glu	Val	Thr	Val	His	His	Leu	Pro	
				155				160						165	
5	Lys	Pro	Ile	Pro	Asp	Gly	Asp	Pro	Asn	His	Gln	Ser	Lys	Asn	Phe
					170				175						180
10	Leu	Val	Pro	Asp	Cys	Glu	His	Ala	Arg	Met	Lys	Val	Thr	Thr	Pro
					185					190					195
15	Cys	Met	Ser	Ser	Gly	Ser	Leu	Trp	Asp	Pro	Asn	Ile	Thr	Val	Glu
					200					205					210
20	Thr	Leu	Glu	Ala	His	Gln	Leu	Arg	Val	Ser	Phe	Thr	Leu	Trp	Asn
					215					220					225
25	Glu	Ser	Thr	His	Tyr	Gln	Ile	Leu	Leu	Thr	Ser	Phe	Pro	His	Met
					230					235					240
30	Glu	Asn	His	Ser	Cys	Phe	Glu	His	Met	His	His	Ile	Pro	Ala	Pro
					245				250						255
35	Arg	Pro	Glu	Glu	Phe	His	Gln	Arg	Ser	Asn	Val	Thr	Leu	Thr	Leu
					260					265					270
40	Arg	Asn	Leu	Lys	Gly	Cys	Cys	Arg	His	Gln	Val	Gln	Ile	Gln	Pro
					275					280					285
45	Phe	Phe	Ser	Ser	Cys	Leu	Asn	Asp	Cys	Leu	Arg	His	Ser	Ala	Thr
					290				295						300
50	Val	Ser	Cys	Pro	Glu	Met	Pro	Asp	Thr	Pro	Glu	Pro	Ile	Pro	Asp
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55	Tyr	Met	Pro	Leu	Trp										
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ggagatggtg gcccagctga ggaacagctc agagctggcc cagagaaagt 250
5 gtgaggtcaa cttgcagctg tggatgtcca acaagaggag cctgtctccc 300
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10 ggaggcacgg tgcctgtgtc tgggctgtgt gaacccttc accatgcagg 400
aggaccgcag catggtgagc gtgcgggtgt tcagccaggt tcctgtgcgc 450
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<211> 594

20 <212> DNA

<213> Homo sapiens

<400> 17

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cacactgcta ctcggctgag gaactgcccc tcggccaggc ccccccacac 150
30 ctgctggctc gaggtgccaa gtgggggcag gctttgcctg tagccctgg 200
gtccagcctg gaggcagcaa gccacagggg gaggcacgag aggcctcag 250
35 ctacgaccca gtgcccggtg ctgcggccgg aggaggtgtt ggaggcagac 300
acccaccaggc gctccatctc accctggaga taccgtgtgg acacggatga 350
ggaccgctat ccacagaagc tggccttcgc cgagtgcctg tgcagaggct 400
40 gtatcgatgc acggacgggc cgcgagacag ctgcgctcaa ctccgtgcgg 450
ctgctccaga gcctgctggt gctgcgcgc cggccctgtt cccgcgcacgg 500
45 ctcggggctc cccacacctg gggccttgc cttccacacc gagttcatcc 550
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<211> 9
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<213> Artificial

5 <220>
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<400> 18
Gly His His His His His His His His
10 1 5 9

<210> 19
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<212> PRT
15 <213> Homo sapiens

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Val Arg Ser Ser Ser Arg Thr Pro Ser Asp Lys Pro Val Ala His
1 5 10 15

20 Val Val Ala Asn Pro Gln Ala Glu Gly Gln Leu Gln Trp Leu Asn
20 25 30

25 Arg Arg Ala Asn Ala Leu Leu Ala Asn Gly Val Glu Leu Arg Asp
35 40 45

30 Asn Gln Leu Val Val Pro Ser Glu Gly Leu Tyr Leu Ile Tyr Ser
50 55 60

35 Gln Val Leu Phe Lys Gly Gln Gly Cys Pro Ser Thr His Val Leu
65 70 75

40 Leu Thr His Thr Ile Ser Arg Ile Ala Val Ser Tyr Gln Thr Lys
80 85 90

45 Val Asn Leu Leu Ser Ala Ile Lys Ser Pro Cys Gln Arg Glu Thr
95 100 105

50 Pro Glu Gly Ala Glu Ala Lys Pro Trp Tyr Glu Pro Ile Tyr Leu
110 115 120

55 Gly Gly Val Phe Gln Leu Glu Lys Gly Asp Arg Leu Ser Ala Glu
125 130 135

60 Ile Asn Arg Pro Asp Tyr Leu Asp Phe Ala Glu Ser Gly Gln Val
140 145 150

Tyr Phe Gly Ile Ile Ala Leu

155 157

5 <210> 20
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10 <220>
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20 <220>
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25 tgttagtcc 58

30 <210> 22
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35 <400> 22
 Met Gly Ala Ala Arg Ser Pro Pro Ser Ala Val Pro Gly Pro Leu
 1 5 10 15

40 Leu Gly Leu Leu Leu Leu Leu Gly Val Leu Ala Pro Gly Gly
 20 25 30

45 Ala Ser Leu Arg Leu Leu Asp His Arg Ala Leu Val Cys Ser Gln
 35 40 45

50 Pro Gly Leu Asn Cys Thr Val Lys Asn Ser Thr Cys Leu Asp Asp
 50 55 60

55 Ser Trp Ile His Pro Arg Asn Leu Thr Pro Ser Ser Pro Lys Asp
 65 70 75

1	Leu	Gln	Ile	Gln	Leu	His	Phe	Ala	His	Thr	Gln	Gln	Gly	Asp	Leu
					80						85				90
5	Phe	Pro	Val	Ala	His	Ile	Glu	Trp	Thr	Leu	Gln	Thr	Asp	Ala	Ser
					95					100				105	
10	Ile	Leu	Tyr	Leu	Glu	Gly	Ala	Glu	Leu	Ser	Val	Leu	Gln	Leu	Asn
					110					115				120	
15	Thr	Asn	Glu	Arg	Leu	Cys	Val	Arg	Phe	Glu	Phe	Leu	Ser	Lys	Leu
					125					130				135	
20	Arg	His	His	His	Arg	Arg	Trp	Arg	Phe	Thr	Phe	Ser	His	Phe	Val
					140					145				150	
25	Val	Asp	Pro	Asp	Gln	Glu	Tyr	Glu	Val	Thr	Val	His	His	Leu	Pro
					155					160				165	
30	Lys	Pro	Ile	Pro	Asp	Gly	Asp	Pro	Asn	His	Gln	Ser	Lys	Asn	Phe
					170					175				180	
35	Leu	Val	Pro	Asp	Cys	Glu	His	Ala	Arg	Met	Lys	Val	Thr	Thr	Pro
					185					190				195	
40	Cys	Met	Ser	Ser	Gly	Ser	Leu	Trp	Asp	Pro	Asn	Ile	Thr	Val	Glu
					200					205				210	
45	Thr	Leu	Glu	Ala	His	Gln	Leu	Arg	Val	Ser	Phe	Thr	Leu	Trp	Asn
					215					220				225	
50	Glu	Ser	Thr	His	Tyr	Gln	Ile	Leu	Leu	Thr	Ser	Phe	Pro	His	Met
					230					235				240	
55	Glu	Asn	His	Ser	Cys	Phe	Glu	His	Met	His	His	Ile	Pro	Ala	Pro
					245					250				255	
60	Arg	Pro	Glu	Glu	Phe	His	Gln	Arg	Ser	Asn	Val	Thr	Leu	Thr	Leu
					260					265				270	
65	Arg	Asn	Leu	Lys	Gly	Cys	Cys	Arg	His	Gln	Val	Gln	Ile	Gln	Pro
					275					280				285	
70	Phe	Phe	Ser	Ser	Cys	Leu	Asn	Asp	Cys	Leu	Arg	His	Ser	Ala	Thr
					290					295				300	
75	Val	Ser	Cys	Pro	Glu	Met	Pro	Asp	Thr	Pro	Glu	Pro	Ile	Pro	Asp
					305					310				315	

Tyr	Met	Pro	Leu	Trp	His						
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<212> PRT

<213> Artificial

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Lys	Gly	Gln	Gly	Arg	Pro	Gly	Pro	Leu	Ala	Pro	Gly	Pro	His	Gln
				20					25					30

Val	Pro	Leu	Asp	Leu	Val	Ser	Arg	Met	Lys	Pro	Tyr	Ala	Arg	Met
				35				40						45

Glu	Glu	Tyr	Glu	Arg	Asn	Ile	Glu	Glu	Met	Val	Ala	Gln	Leu	Arg
				50				55						60

Asn	Ser	Ser	Glu	Leu	Ala	Gln	Arg	Lys	Cys	Glu	Val	Asn	Leu	Gln
				65				70						75

Leu	Trp	Met	Ser	Asn	Lys	Arg	Ser	Leu	Ser	Pro	Trp	Gly	Tyr	Ser
				80					85					90

Ile	Asn	His	Asp	Pro	Ser	Arg	Ile	Pro	Val	Asp	Leu	Pro	Glu	Ala
				95					100					105

Arg	Cys	Leu	Cys	Leu	Gly	Cys	Val	Asn	Pro	Phe	Thr	Met	Gln	Glu
				110				115						120

Asp	Arg	Ser	Met	Val	Ser	Val	Pro	Val	Phe	Ser	Gln	Val	Pro	Val
				125					130					135

Arg	Arg	Arg	Leu	Cys	Pro	Pro	Pro	Pro	Arg	Thr	Gly	Pro	Cys	Arg
				140					145					150

Gln	Arg	Ala	Val	Met	Glu	Thr	Ile	Ala	Val	Gly	Cys	Thr	Cys	Ile
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Phe	Gly	His												
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Cys Leu Ala His His Asp Pro Ser Leu Arg Gly His Pro His Ser
20 25 30

15 His Gly Thr Pro His Cys Tyr Ser Ala Glu Glu Leu Pro Leu Gly
35 40 45

20 Gln Ala Pro Pro His Leu Leu Ala Arg Gly Ala Lys Trp Gly Gln
50 55 60

Ala Leu Pro Val Ala Leu Val Ser Ser Leu Glu Ala Ala Ser His
65 70 75

25 Arg Gly Arg His Glu Arg Pro Ser Ala Thr Thr Gln Cys Pro Val
80 85 90

Leu Arg Pro Glu Glu Val Leu Glu Ala Asp Thr His Gln Arg Ser
95 100 105

30 Ile Ser Pro Trp Arg Tyr Arg Val Asp Thr Asp Glu Asp Arg Tyr
110 115 120

35 Pro Gln Lys Leu Ala Phe Ala Glu Cys Leu Cys Arg Gly Cys Ile
125 130 135

Asp Ala Arg Thr Gly Arg Glu Thr Ala Ala Leu Asn Ser Val Arg
140 145 150

40 Leu Leu Gln Ser Leu Leu Val Leu Arg Arg Arg Pro Cys Ser Arg
155 160 165

Asp Gly Ser Gly Leu Pro Thr Pro Gly Ala Phe Ala Phe His Thr
170 175 180

45 Glu Phe Ile His Val Pro Val Gly Cys Thr Cys Val Leu Pro Arg
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		20							25					30	
15	Asn	Gln	Lys	Ser	Phe	Tyr	His	Val	Ser	Tyr	Gly	Pro	Leu	His	Glu
				35					40					45	
	Gly	Cys	Met	Asp	Gln	Ser	Val	Ser	Leu	Ser	Ile	Ser	Glu	Thr	Ser
20					50				55					60	
	Lys	Thr	Ser	Lys	Leu	Thr	Phe	Lys	Glu	Ser	Met	Val	Val	Val	Ala
				65					70					75	
25	Thr	Asn	Gly	Lys	Val	Leu	Lys	Lys	Arg	Arg	Leu	Ser	Leu	Ser	Gln
				80					85					90	
	Ser	Ile	Thr	Asp	Asp	Asp	Leu	Glu	Ala	Ile	Ala	Asn	Asp	Ser	Glu
				95						100				105	
30	Glu	Glu	Ile	Ile	Lys	Pro	Arg	Ser	Ala	Pro	Phe	Ser	Phe	Leu	Ser
				110						115				120	
	Asn	Val	Lys	Tyr	Asn	Phe	Met	Arg	Ile	Ile	Lys	Tyr	Glu	Phe	Ile
35					125					130				135	
	Leu	Asn	Asp	Ala	Leu	Asn	Gln	Ser	Ile	Ile	Arg	Ala	Asn	Asp	Gln
					140					145				150	
40	Tyr	Leu	Thr	Ala	Ala	Ala	Leu	His	Asn	Leu	Asp	Glu	Ala	Val	Lys
					155					160				165	
	Phe	Asp	Met	Gly	Ala	Tyr	Lys	Ser	Ser	Lys	Asp	Asp	Ala	Lys	Ile
					170					175				180	
45	Thr	Val	Ile	Leu	Arg	Ile	Ser	Lys	Thr	Gln	Leu	Tyr	Val	Thr	Ala
					185					190				195	

Gln	Asp	Glu	Asp	Gln	Pro	Val	Leu	Leu	Lys	Glu	Met	Pro	Glu	Ile	
				200					205					210	
5	Pro	Lys	Thr	Ile	Thr	Gly	Ser	Glu	Thr	Asn	Leu	Leu	Phe	Phe	Trp
				215					220					225	
10	Glu	Thr	His	Gly	Thr	Lys	Asn	Tyr	Phe	Thr	Ser	Val	Ala	His	Pro
				230					235					240	
15	Asn	Leu	Phe	Ile	Ala	Thr	Lys	Gln	Asp	Tyr	Trp	Val	Cys	Leu	Ala
				245					250					255	
20	Gly	Gly	Pro	Pro	Ser	Ile	Thr	Asp	Phe	Gln	Ile	Leu	Glu	Asn	Gln
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25	Ala														
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45	Leu	Phe	Leu	Phe	His	Ser	Glu	Thr	Ile	Cys	Arg	Pro	Ser	Gly	Arg
					20					25					30
50	Lys	Ser	Ser	Lys	Met	Gln	Ala	Phe	Arg	Ile	Trp	Asp	Val	Asn	Gln
					35					40					45
55	Lys	Thr	Phe	Tyr	Leu	Arg	Asn	Asn	Gln	Leu	Val	Ala	Gly	Tyr	Leu
					50					55					60
60	Gln	Gly	Pro	Asn	Val	Asn	Leu	Glu	Glu	Ile	Asp	Val	Val	Pro	
					65					70					75
65	Ile	Glu	Pro	His	Ala	Leu	Phe	Leu	Gly	Ile	His	Gly	Gly	Lys	Met
					80					85					90
70	Cys	Leu	Ser	Cys	Val	Lys	Ser	Gly	Asp	Glu	Thr	Arg	Leu	Gln	Leu
					95					100					105
75	Glu	Ala	Val	Asn	Ile	Thr	Asp	Leu	Ser	Glu	Asn	Arg	Lys	Gln	Asp
					110					115					120

Lys Arg Phe Ala Phe Ile Arg Ser Asp Ser Gly Pro Thr Thr Ser
125 130 135

5 Phe Glu Ser Ala Ala Cys Pro Gly Trp Phe Leu Cys Thr Ala Met
140 145 150

Glu Ala Asp Gln Pro Val Ser Leu Thr Asn Met Pro Asp Glu Gly
155 160 165

10 Val Met Val Thr Leu Phe Tyr Phe Gln Glu Asp Glu
170 175 177